

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE  
PATENT APPLICATION

5     Entitled :   A BOTTOM-TO-SURFACE CONNECTION DEVICE  
                  INCLUDING A LEAKTIGHT FLEXIBLE JOINT BETWEEN  
                  A RISER AND A FLOAT

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ABSTRACT OF THE DISCLOSURE

20           The present invention relates to a bottom-to-surface  
          connection device comprising at least one undersea pipe  
          or riser capable of including a single float, said float  
          being connected at its bottom end to a junction device  
          creating a leaktight flexible joint between the bottom  
25           end of the float and said riser, wherein said junction  
          device is interposed between and secured to a bottom  
          portion of the riser going down to the sea bottom and a  
          top portion of the riser passing through said float and  
          rising to the surface, said junction device comprising at  
30           least one first laminated abutment in the form of a body  
          of revolution having a plurality of elastomer layers  
          defining surfaces of revolution that are frustoconical in  
          shape or ellipsoidal in section.

## A B S T R A C T

A BOTTOM-TO-SURFACE CONNECTION DEVICE INCLUDING A  
LEAKTIGHT FLEXIBLE JOINT BETWEEN A RISER AND A FLOAT

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The present invention relates to a bottom-to-surface connection device comprising at least one undersea pipe or riser (1, 1a-1b) capable of including a single float (2, 2<sub>1</sub>-2<sub>7</sub>), said float being connected at its bottom end to a junction device (8) creating a leaktight flexible joint between the bottom end of the float (2) and said riser (1a), the connection device being characterized in that said junction device (8) is interposed between and secured to a bottom portion (1a) of the riser going down to the sea bottom and a top portion of the riser passing through said float and rising to the surface, said junction device (8) comprising at least one first laminated abutment in the form of a body of revolution having a plurality of elastomer layers defining surfaces of revolution that are frustoconical in shape or ellipsoidal in section.

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35 Translation of the title and the abstract as published by the PCT Authorities,  
possibly after making changes, ex officio, e.g. under PCT Rules 37.2, 38.2, and/or  
48.3.